



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,029	04/17/2006	Shigeo Kamamoto	4731-0132PUS1	8726
2292 7590 04/14/2010 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
IRVIN, THOMAS W				
ART UNIT		PAPER NUMBER		
3657				
NOTIFICATION DATE		DELIVERY MODE		
04/14/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/576,029

Applicant(s)

KAMAMOTO ET AL.

Examiner

THOMAS IRVIN

Art Unit

3657

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-18 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-18 and 21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date 20091001
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 21 January 2010 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5-8, 11, 12, 15, 16, 18, and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rooij et al. (5,728,021) in view of Anpo (JP 01-169149).

In Re claims 1, 2, 11, and 21, Van Rooij et al. discloses a power transmission chain entrainable between a first pulley possessing conical sheave surfaces (65) and a second pulley possessing conical sheave surfaces (67), the power transmission chain (31) comprising a plurality of links (33,53) each possessing through-holes (35,37), and a

plurality of pins (45) and strips (47) inserted through the through-holes for interconnecting the plural links, the power transmission chain transmitting power by way of contact between opposite end faces of the each of the pins and the sheave surfaces of the first and second pulleys, wherein all the plurality of pins substantially have the same length in the longitudinal direction (see Fig. 3). Van Rooij et al. fail to teach plural types of pins with different areas and rigidities in the longitudinal direction.

Anpo teaches including, in a power transmission chain, a plurality of types of pins (12a₂, 12b₂, 12c₂) having different areas and rigidities in the longitudinal direction thereof. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the power transmission chain of Van Rooij et al. to include a plurality of types of pins, as taught by Anpo, to reduce and randomize the chordal action caused by the contact between the pins and links, and pins and strips, of the power transmission chain. The examiner notes that rigidity is based, in part, on an area, and therefore the differing cross-sectional surface areas of the pins mean that the different pins have different rigidities.

In Re claims 3 and 12, in the chain as modified, a first group of pins (12a₂) of the plurality of pins have substantially the same sectional shape and sectional area, and a second group of pins (12b₂) have a different sectional area than the first group of pins, and a third group of pins (12c₂) have even a different sectional area.

In Re claims 5, 15, and 16, the sectional area of a groups of pins (12a, 12b, 12c) appear to be between 1.1 and 2 times the sectional area of a the other groups of pins (see Figs. 8-10 of Anpo).

In Re claims 6, 8, and 18, Van Rooij et al. disclose a power transmission chain (31) entrainable between a first and second pulley possessing conical sheave surfaces (see Fig. 5) and transmitting power by way of contact between opposite end faces of plural chain friction transmission members (45) and the sheave surfaces (65,67) of the first and second pulleys, the chain friction transmission members arranged along a chain longitudinal direction at predetermined space intervals, the chain comprising a plurality of links (33,53) each possessing first and second through-holes (35,37) arranged in the chain longitudinal direction, and a plurality of first pins (45) and a plurality of strips (47), each of which penetrate the first through-hole of one link and the second through-hole of another other link thereby interconnecting the links, adjoining in a chain widthwise direction, in a manner to provide bending in the chain longitudinal direction, wherein the pins are fixed in the first through-hole of the one link and movably fitted in the second through-hole of the other link, and also movably fitted in the first through-hole of the one link and fixed in the second through-hole of the other link, so as to be brought into relative movement in rolling contact thereby permitting the bending of the chain. The pins include an involute of a circle (see col. 2, lines 15-18, and col. 5, lines 37-57). Van Rooij et al. fail to disclose plural types of first pins.

Anpo teaches making a power transmission chain (50) with several types of pins (12a,12b,12c) randomly installed throughout the chain. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the first pins of Van Rooij et al. to have included several different types of pins, as taught by Anpo, to further reduce and randomize the chordal action caused by the contact

between the pins and links, and the pins and strips, of the power transmission chain.

The examiner notes that rigidity is based, in part, on an area, and therefore the differing cross-sectional surface areas of the pins in the chain, as modified, mean that the different pins have different rigidities.

In Re claim 7, see friction transmission members (45) of Van Rooij et al. (fig. 3).

In Re claims 22-24, see end faces (84) of strips (47) shown in fig. 5 of Van Rooij et al. not contacting the sheave faces, and col. 5, lines 14-17. Additionally, the examiner notes that the claims are drawn to the chain only, and not the power transmission, and therefore the limitations regarding the pulley have not been given patentable weight.

Claims 4, 10, 13, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rooij et al. (5,728,021) in view of Anpo (JP 01-169149) as applied to claims 1, 2, and 6 above, and further in view of Zimmer (4,718,880).

Van Rooij et al., as modified, fail to teach links having differing pitches.

Zimmer teaches, with reference to Fig. 9, arranging links (68a,70a,72a), with differing pitches, randomly in a chain (see col. 1 and 2, lines 60-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the chain of Van Rooij et al. as modified, to include links of differing pitches, as taught by Zimmer, to lessen the noise of the chain against the sheaves, without affecting the tensional strength of the chain.

In Re claim 17, the sectional area of a groups of pins (12a,12b,12c) appear to be between 1.1 and 2 times the sectional area of a the other groups of pins (see Figs. 8-10 of Anpo).

Response to Arguments

Applicant's arguments filed 21 January 2010 have been fully considered but they are not persuasive.

Regarding the 35 U.S.C. 103(a) rejections over Van Rooij et al. (5,728,021) in view of Anpo (JP 01-169149), the examiner has obtained a certified translation of the Anpo reference (included). The examiner also points out that the motivation to modify the pins of Van Rooij et al. to include plural size pins is found on page 4 of the included translation of the Anpo reference:

"However, there is a problem with the conventional transmission belt as described above, in that a large amount of noise occurs during driving. In other words, the opposing faces of all of the rocker pins and joint pins have identical radiuses of curvature and they vibrate at the opposing faces, so the circumferential speed of the transmission belt varies with a fixed cycle. Therefore, when the transmission belt is wound on a pulley and rotated the noise level becomes high at a prescribed frequency. To solve such a problem there is a method whereby the rocker pins and joint pins are provided with two or more radiuses of curvature, so that when the transmission belt is wound on a pulley the periodicity of the change in the circumferential speed of the

transmission belt is reduced. Thus, the peak level of noise of a prescribed frequency can be reduced. "

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS IRVIN whose telephone number is (571)270-3095. The examiner can normally be reached on M-F 10-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on (571) 272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas Irvin/
Examiner, Art Unit 3657

/Bradley T King/
Primary Examiner, Art Unit 3657